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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,088	10/23/2001	Jinghui Li	SYCS-059/P68	9678

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BOSTON, MA 02109

EXAMINER

LI, SHI K

ART UNIT	PAPER NUMBER
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2633

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/004,088

Applicant(s)

LI, JINGHUI

Examiner

Shi K. Li

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 15 is/are rejected.
- 7) ☒ Claim(s) 13,14,16 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/16/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. FIG. 2 is objected to under 37 CFR 1.84(o) because there are no descriptive legends for the boxes. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Li et al. (U.S. Patent 6,816,681 B2).

Regarding claim 1, Li et al. teaches a method for equalizing (balancing) analogous channels of WDM (see col. 3, lines 6-8). Li et al. teaches in FIG. 3A an optical network with a starting node site A, an ending node site D and a plurality of intermediate add/drop nodes site B and site C. Li et al. teaches in FIG. 3C express channels AC5 and ACL, non-express channels AC1' and AC3', and channels added by ADM nodes AC2' and AC4. Li et al. teaches in FIG. 4A-FIG. 4D steps for calculating transmitter power for these channels.

Regarding claim 5, Li et al. teaches in FIG. 4A-FIG. 4D steps for calculating transmitter power using OSNR (e.g., see step 115).

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4. Claims 1, 6 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Olier et al. (U.S. Patent Application Pub. 2003/0223747 A1).

Regard claim 1, Olier et al. discloses in FIG. 1 a WDM optical network. FIG. 1 comprises a starting node 102, an ending node 106 and a plurality of ADM 108. The starting node sends optical channels $\lambda_1, \dots, \lambda_n$. Olier et al. teaches in paragraph [0042] to drop and add λ_i . That is, Olier et al. teaches non-express channels λ_i and express channels that are not dropped at ADMs. Olier et al. teaches in paragraphs [0055]-[0062] to calculate power for express channels, non-express channels and added channels.

Regarding claim 6, Olier et al. teaches in paragraphs [0055]-[0062] to use power as channel performance.

Regarding claim 9, Olier et al. teaches in paragraph [0055] to calculate average optical power per channel.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 3-4, 6-7, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barnard et al. (U.S. Patent 6,219,162 B1) in view of Grasso et al. (U.S. Patent 5,943,151).

Barnard et al. teaches a method for equalizing (balancing) channels of WDM (see col. 3, lines 6-8). Barnard et al. teaches in FIG. 7 an optical network with a starting node including transmitter 11 and multiplexer 13, an ending node including demultiplexer 15 and receivers 17,

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and an add/drop multiplexer (ADM) 65. S1 is non-express channel and S2-S4 are express channels. Barnard et al. teaches in FIG. 8A-FIG. 8C and col. 10, lines 3-67 to measure bit-error rate (BER), calculate transmitter power and adjust transmitter power accordingly. This is done for express channel, non-express channel and channels added by ADM. The difference between Barnard et al. and the claimed invention is that Barnard et al. does not include a plurality of ADM in the example of FIG. 7. However, it is obvious to one of ordinary skill in the art to use the same method for networks with a plurality of ADMs. One of ordinary skill in the art would have been motivated to apply the method of Barnard to networks with a plurality of ADMs because such networks are commonly found in real applications. For example, Grasso et al. teaches in FIG. 5 a network with two ADM 58 and 68. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the method of Barnard et al. to networks with a plurality of ADMs because such networks are commonly found in real applications, as taught by Grasso et al.

Regarding claim 3, Barnard et al. teaches in step 195 of FIG. 5 to determine difference between actual channel performance P_{\max} and predetermined channel performance $P(j)_{\text{Fail}}$.

Regarding claim 4, Barnard et al. teaches in step 220 of FIG. 5 a linear equation between transmitter power and channel performance.

Regarding claim 6, Barnard et al. teaches in FIG. 5 to measure channel power.

Regarding claim 7, Barnard et al. teaches in col. 3, lines 2 to equalizing BER performance.

Regarding claim 10, Barnard et al. teaches in col. 5, lines 61-65 that channel performance is based on BER-power curves for all channels at installation.

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Regarding claim 12, Barnard et al. teaches in FIG. 5 an iteration process.

7. Claims 2 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barnard et al. and Grasso et al. as applied to claims 1, 3-4, 6-7, 10 and 12 above, and further in view of Lu (U.S. Patent 6,570,683 B1).

Barnard et al. and Grasso et al. have been discussed above in regard to claims 1, 3-4, 6-7, 10 and 12. The difference between Barnard et al. and Grasso et al. and the claimed invention is that Barnard et al. and Grasso et al. do not teach to determine express channels and non-express channels based on a wavelength assignment table. Lu teaches in col. 4, line 58-col. 5, line 24 that a wavelength assignment table is commonly used to design a network by assigning wavelengths to paths between node pairs. One of ordinary skill in the art would have been motivated to combine the teaching of Lu with the modified channel equalization method of Barnard et al. and Grasso et al. because a wavelength assignment table clearly identifies light path for each wavelength and is a convenient engineering tool used for network planning. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine express channels and non-express channels based on a wavelength assignment table, as taught by Lu, in the modified channel equalization method of Barnard et al. and Grasso et al. because a wavelength assignment table clearly identifies light path for each wavelength and is a convenient engineering tool used for network planning.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barnard et al. and Grasso et al. as applied to claims 1, 3-4, 6-7, 10 and 12 above, and further in view of Ransford et al. (U.S. Patent 6,532,087 B1).

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Barnard et al. and Grasso et al. have been discussed above in regard to claims 1, 3-4, 6-7, 10 and 12. The difference between Barnard et al. and Grasso et al. and the claimed invention is that Barnard et al. and Grasso et al. do not teach to use Q value as channel performance.

Ransford et al. teaches in col. 2 lines 1-5 formula relating Q-factor and BER. One of ordinary skill in the art would have been motivated to combine the teaching of Ransford et al. with the modified channel equalization method of Barnard et al. and Grasso et al. because Q-factor can be used to characterize signal quality under conditions in which it is not practical to measure the BER (see col. 1, lines 60-64 of Ransford et al.). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Q value, instead of BER, as channel performance, as taught by Ransford et al., in the modified channel equalization method of Barnard et al. and Grasso et al. because Q-factor can be used to characterize signal quality under conditions in which it is not practical to measure the BER.

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. (U.S. Patent 6,816,681 B2) in view of Yang (U.S. Patent 6,804,464 B2).

Li et al. has been discussed above in regard to claims 1 and 5. The difference between Li et al. and the claimed invention is that Li et al. does not teach a user-defined optical SNR spectral shape. Yang teaches in col. 3, lines 27-30 to allow user to program output level of individual channel. One of ordinary skill in the art would have been motivated to combine the teaching of Yang with the equalization method because power requirement for individual channel depends on its content (whether it carries wide bandwidth signal or narrow bandwidth signal) and quality of service). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use user-defined optical SNR spectral shape as predetermined channel

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performance value, as taught by Yang, in the equalization method because power requirement for individual channel depends on its content and quality of service.

Allowable Subject Matter

10. Claims 13-14 and 16-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

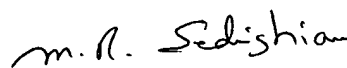
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

skl
6 December 2004


M. R. SEDIGHIAN
PRIMARY EXAMINER